

RemarksProvisional Election

1. Applicant herein affirms the provisional election (without traverse) of Group I, claims 1-9 of the application.
2. Applicants reserve the right to file a divisional application on the non-elected claims.

Claims 1 - 8 — 35 U.S.C. §103

3. In paragraph 7 of the office action, the examiner has rejected claims 1-8 in light of Hunt, Jr. et al, US 5, 221,377 (Hunt). The examiner asserts that Hunt generally teaches steps similar to those of the present invention, though, admittedly not in the sequence of the inventive method. The sole argument of the rejection is that this renders the present method obvious because "applicant has not shown the specific criticality of step c) removing metal after step b) rolling..." Office Action, pg. 4, *emphasis added*.

4. Applicant respectfully points out that the examiner has misapprehended the criticality of the sequence of the method invention, e.g. that the plate product is machined prior to the solution heat treatment and quenching of the product. The specification provides extensive evidentiary support for the criticality of this sequence of steps of the invention, including comparative data demonstrating the unexpected improvement in the mechanical properties of plate products produced by the invention.

5. First, the specification describes how the last step of heat treatment is quenching the metal to "lock in the microstructure of the alloy achieved during solution heat treatment." Specification, ¶3. The specification further recites the problem of quench sensitivity found in the prior art production methods, in particular that

As the thickness of the plate increases, the quench rate for the plate decreases which results in lower achievable mechanical properties. Moreover some aluminum alloys have mechanical properties that are readily lost if rapid quenching is not performed. It would be desirable to produce such alloys in thick cross sections utilizing high quench rates to take advantage of improved mechanical properties. However the product thickness has been limited by the quench sensitivity of those alloys and slower quench rates.

Specification, ¶4.

6. Second, the present invention overcomes the aforesaid inherent problem in plate products by removing material from the product prior to quenching. As stated in the specification, "By removing material so that that product achieves a near-net shape, the product is thinner and the quench rate for the product is higher than the quench rate for an ingot or a traditional flat product. Accordingly, superior properties are achievable in a product produced according to the present invention due to the opportunity for a high quench rate." Id. at ¶15.

7. The importance of the sequence of the method steps of the invention is further described as it relates to the stretching of the products. In short, by removing material to provide the product with a near net-shape, and then stretching the product into what is essentially its final shape, the residual stress of the product may be relieved, and flatness and mechanical properties improved. However, when removal of material precedes the step of stretching the product, "the stretching process is facilitated due to the smaller volume of the product being stretched." Id. at ¶16.

8. In addition, by removing material from the product prior to the artificial aging process, the process may then be performed more rapidly in both the heat up of the product and the cool down of the product providing greater control and efficiency. Id. at ¶17.

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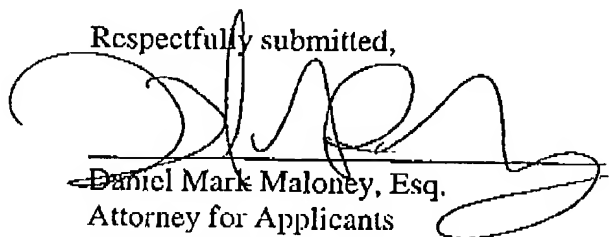
9. Finally, the superior properties obtained using the present invention is demonstrated within the patent application by a direct comparison of sheet samples produced using the standard method and the inventive method. Fig. 5 and Fig. 6 summarize data on the fracture toughness of two plates produced from essentially identical ingots. As shown in these charts, the plates produced by the inventive method had about 10% to 20% higher fracture toughness. See Id. Fig. 5, Fig. 6 and ¶25.

10. In short, the criticality of the sequence of the inventive method is well demonstrated by the specification. Given that the specification's description of the invention's merits is supported by concrete, comparative data, the criticality of the sequence of the method steps should be unquestioned.

11. Therefore, given the evidentiary support of the specification and comparative data provided by the applicant, the examiner's assertion of obviousness, assuming that a *prima facie* case of obviousness had been made by the general disclosures of hunt, this case has been rebutted.

It is respectfully submitted that the present application is in condition for allowance. If the Examiner would like to suggest changes of a formal nature to place this application in better condition for allowance, a telephone call to Applicants' undersigned attorney would be appreciated.

Respectfully submitted,



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